


Doc Code: AP.PRE.REQ

PTO/SB/33 (07-05)

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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) P1721US01 (65925/05-356)	
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		First Named Inventor Toby SMITH	
		Art Unit 2646	Examiner Huyen D. Le
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.			
This request is being filed with a notice of appeal.			
The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the		 Signature Terry L. Watt Typed or printed name	
<input type="checkbox"/> applicant/inventor.		918-599-0621 Telephone number	
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/98)		3/24/06 Date	
<input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>42,214</u>			
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____			
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
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MAR 24 2006

PATENT  
EXAMINING GROUP 2643

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

<b>Applicant(s):</b> Toby SMITH <b>Application No.:</b> 10/619,700 <b>Filed:</b> 07/14/2003 <b>Title:</b> Dual Side Mount Shock Resistant Piezoelectric Bender <b>Art Unit:</b> 2646 <b>Examiner:</b> Huyen D. Le <b>Attorney Docket No.:</b> P1721US01 (65925/05-356)	<b>CERTIFICATE OF MAILING UNDER 37 CFR 1.8</b>  I hereby certify that this paper or fee is being deposited with the United States Postal Service with sufficient postage as "First Class Mail" and is addressed to Mail Stop AF, Commissioner for Patents, P. O. Box 1450, Alexandria, VA 22313-1450 on this <u>24th</u> day of March 2006.  <u>Nancy G. Moore</u> Nancy Moore
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Alexandria, VA 22313-1450

BRIEF IN SUPPORT OF  
PRE-APPEAL REQUEST FOR REVIEW

Dear Sirs:

This paper is being submitted in conjunction with the filing of a "Pre-Appeal Request for Review" pursuant to 1296 Off. Gaz. Pat. Office 67 (July 12, 2005) and subsequent extension thereof (OG Notices, February 7, 2006).

**SUMMARY**

Applicant's invention is a piezoelectric device (bender) that is mounted on a nodal ring (fulcrum) using adhesive. It differs from prior art mounting methods in that it is constrained along a nodal ring from both sides and adhesive is used on both sides to hold it in place.

All claims of this case stand rejected under 35 USC 103(a) as being unpatentable over Byrne (USPN 4,330,729) in view of Nakagawa (USPN 4,430,529). [Office Action of July 27, 2005, "OA", hereinafter, at page 2]. It is said Nakagawa has not been used to modify the structure of Byrne, but instead has been provided as an example of using adhesive for the diaphragm to a support surface. [OA, page 3].

In applicant's view, the Examiner has utilized a reference that teaches mechanical mounting on the nodal ring (Byrne) – and which discourages the use of adhesives – in combination with a reference (Nakagawa) that detunes a bender by constraining it at its center (anti-node). Nakagawa utilizes mounting adhesives on only a single side.

#### Arguments

1. **The cited references do not contain a *single* example of a piezoelectric device that is mounted on a nodal ring by using an adhesive on *both* sides of the device.**

The Examiner has not provided a reference where glue is used on *both* sides of a piezoelectric element to mount it and, more particularly, to mount it via adhesives along a nodal ring. Nakagawa (col. 3, 29-31, col. 4, 42-44) is said to use adhesive to mount the device to the diaphragm [OA, p. 2]. However, both passages refer to devices that use adhesive on a *single* side. Col. 3, 29-31, discusses Figure 5, which shows support (and adhesive) for the diaphragm on a one side. Col. 4, 42-44 refers to the use of adhesive on a *single* side (emphasis added):

In a fifth embodiment in FIG. 8, the piezoelectric diaphragm 12 is kept stuck by adhesive or pressurized by protuberance 14a at its central portion only from one side, which corresponds to the embodiment in FIG. 6 from which the frame 13 and elastic body 21 are omitted, where the diaphragm 11 is fixed to the edge of frame 14.

Adhesives are used in this single-sided embodiment (i.e., only a single central protuberance is used) to hold the diaphragm at a point *not* on the nodal ring with adhesive on only one side.

Nakagawa's Figure 6 embodiment – which has tapered support protuberances 13a and 14a on both sides of the bender – does not use adhesive to attach them to the bender. Although the specification does discuss sticking the elastic bodies 21 and 22 to the upper and lower surfaces of the diaphragm (e.g., col. 3, lines 59-66), there is no mention of “adhering” them to the

protuberances. Nakagawa states sticking is optional and a variation is presented in which bodies 21 and 22 are held in place by tension alone (col. 4, 24-28), i.e., without sticking.

Nakagawa does not use adhesive at the center so much for *support* but rather to hold the center stationary, thereby altering its acoustic properties. See, Col. 3, 29-31: "The central portion of diaphragm 11 is fixed substantially at a point to the tip of support 17 by the adhesive, thereby being kept stationary.". Mounting support occurs at its perimeter – not at a nodal ring – where the it is said adhesive may optionally be used to affix the bender to its mounting frame.

Turning to **Byrne**, Byrne does not teach that a piezoelectric device may be mounted on a nodal ring using adhesive on both sides. Byrne (col. 1, 35-37) indicates it may be mounted on a support member by using rubber-like cement.<sup>1</sup> Byrne mentions – and discourages – the use of adhesives in this passage: "In many instances, the diaphragm is attached to the support member by a rubber-like cement which requires a period of time for curing" (col. 1, 35-37, emphasis added). Of course, the time required to apply and cure an adhesive would be antithetical to Byrne's goal of providing "an improved piezoelectric transducer assembly that can be rapidly and easily assembled . . .", col. 2, 2-3, emphasis added.

Thus, there is no teaching or suggestion that a piezoelectric device might be mounted on a nodal ring using an adhesive on *both* sides of the device, as has been suggested by applicant.

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<sup>1</sup> Note that in applicant's Office Action Response of September 23, 2005, applicant may have improperly conceded Byrne discloses mounting with adhesive on a nodal ring. In fact, the cited passage does *not* say this. It says that adhesives have been used on a "support member" (see his support member 20, col. 4, 1-5) which means that the bender is peripherally mounted on an annular (not nodal) ring. That being said, applicant concedes that mounting on a nodal ring on *one side* with adhesive is well known. Attorney for applicant apologizes for the misunderstanding.

2. The Examiner has combined a reference that teaches the use of adhesive on one side of a piezoelectric device at a non-nodal location (Nakagawa) with a reference that teaches clamping the device on a nodal ring (Byrne) to reject applicant's invention.

Nakagawa "mounts" (actually, "restrains" would be more appropriate) a piezoelectric device at its center, thereby changing its sonic properties. The center of the device is *not* a nodal point as that term is used herein (compare Nakagawa Figures 2 and 4). There is no teaching in Nakagawa that adhesive could be applied to both sides of such a device.

Byrne discourages use of adhesives (see, e.g., col. 1, 35-38). Further, Byrne's mechanical mounting on a nodal curve by clamping will result in an alteration of the sonic properties of the device (e.g., the diaphragm is clamped in place, thereby inevitably stressing it and broadening the effective dimensions of the nodal ring beyond its actual dimensions).

Although Byrne mentions gluing a diaphragm to a support member (col. 1, lines 29-37), he never indicates that such glue might be placed on *both* sides of the diaphragm. In fact, gluing is listed as a problem for which Byrne's disclosed invention is offered as a solution.

Finally, in the OA at Paragraph 3, the Examiner indicates he has not combined Nakagawa with Byrne to modify its structure, but Nakagawa has been cited as an example of "an adhesive for securing the diaphragm to a support surface of a piezoelectric loudspeaker." [OA at page 3].

In reply, applicant finds this comment somewhat puzzling in view of the fact that Byrne itself includes a reference to the use of adhesive to affix a diaphragm to a support surface (albeit on a single side). Thus, applicant would argue that Nakagawa provides nothing beyond Byrne and neither reference – either individually or in combination – teaches applicant's invention.

**3. The prior art teaches away from applicant's invention.**

Byrne discourages the use of adhesives (see, e.g., col. 1, lines 35-38). The known (to Byrne) disadvantage of gluing a piezoelectric device to a support structure should have been taken into account in any obviousness determination. Applicant believes this aspect of Byrne was not properly considered and, if it had been, the instant claims would have been allowed.

**4. There is no teaching or suggestion in the prior art that a piezoelectric device might be mounted by using glue on both sides along a nodal ring.**

There is no mention in any case relied upon that a piezoelectric device might be mounted on both sides along a nodal ring using adhesive. In every case cited by the Examiner, the reference merely mentions or utilizes the well-known practice of mounting a piezoelectric device by placing an adhesive on only one side or, alternatively in those instances where the diaphragm is mounted from *both* sides, a physical mounting method (e.g., clamping, etc.) is used.

Thus, the Examiner has failed to provide any motivation or suggestion *in the prior art* for the modification to Byrne (and/or Nakagawa) that is relied upon by the Examiner and that is said to yield the instant invention.

Respectfully Submitted,

3/24/06  
Date

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